

***River Protection Project –
Waste Treatment Plant***

**Authorization Basis Maintenance
Proposal**

February 29, 2000



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This proposal is offered for review and comment and will be the basis for ongoing discussions with the Regulatory Unit.

Purpose

The purpose of this proposal is to present a new set of processes and procedures for the River Protection Project – Waste Treatment Plant (RPP-WTP) Authorization Basis (AB) Maintenance Program. The proposal presents the major objectives and then discusses specific program activities for the various elements of AB maintenance that BNFL believes can be improved. A justification section at the end discusses the reasons why program changes remain consistent with regulatory requirements. The intent of the revised program is to conduct effective AB maintenance so facility design and administrative controls meet the provisions of adequate safety, compliance with all applicable rules and regulations, and conformance to top-level standards and principles without adversely impacting project schedule.

Objectives

There are two major objectives to the AB maintenance proposal:

- A. Alignment of documents with the AB
 - A1) Align RPP-WTP facility design and project procedures, plans, and programs with the AB by mid-April 2000
 - A2) Maintain alignment of documents with the AB.
- B. Establish a process to permit the start of work, at BNFL Inc.'s risk, while awaiting approval of an Authorization Basis change – either by BNFL management or the Regulatory Unit (RU) (for those AB changes requiring RU approval).

Implementation Schedule

The implementation schedule for the activities described in this proposal are summarized below.

By March 1, 2000:

- Formal program description of revised AB maintenance program issued to RU
- ABAR¹ issued for “proceed-at-risk”

By April 1, 2000:

- Design documents reviewed for AB consistency using either a DIM or AB screening
- DBEs identified from ISM Cycle II and compared against a list of AB significant and bounding hazards
- ABAR for “proceed-at-risk” approved by RU
- Procedure changes identified for revised AB maintenance program.

By April 24, 2000:

- Necessary ABCNs and SEs² approved
- AB revisions issued for all changes not requiring RU approval

¹ ABAR = Authorization Basis Amendment Request

² ABCN = Authorization Basis Change Notice
SE = Safety Evaluation

- Engineering and AB procedures issued to reflect new AB maintenance program
- Training completed for all affected project personnel
- Deficiency Reports issued for open ABARs in accordance with “proceed-at-risk” to ensure appropriate tracking and closure.

By June 30, 2000:

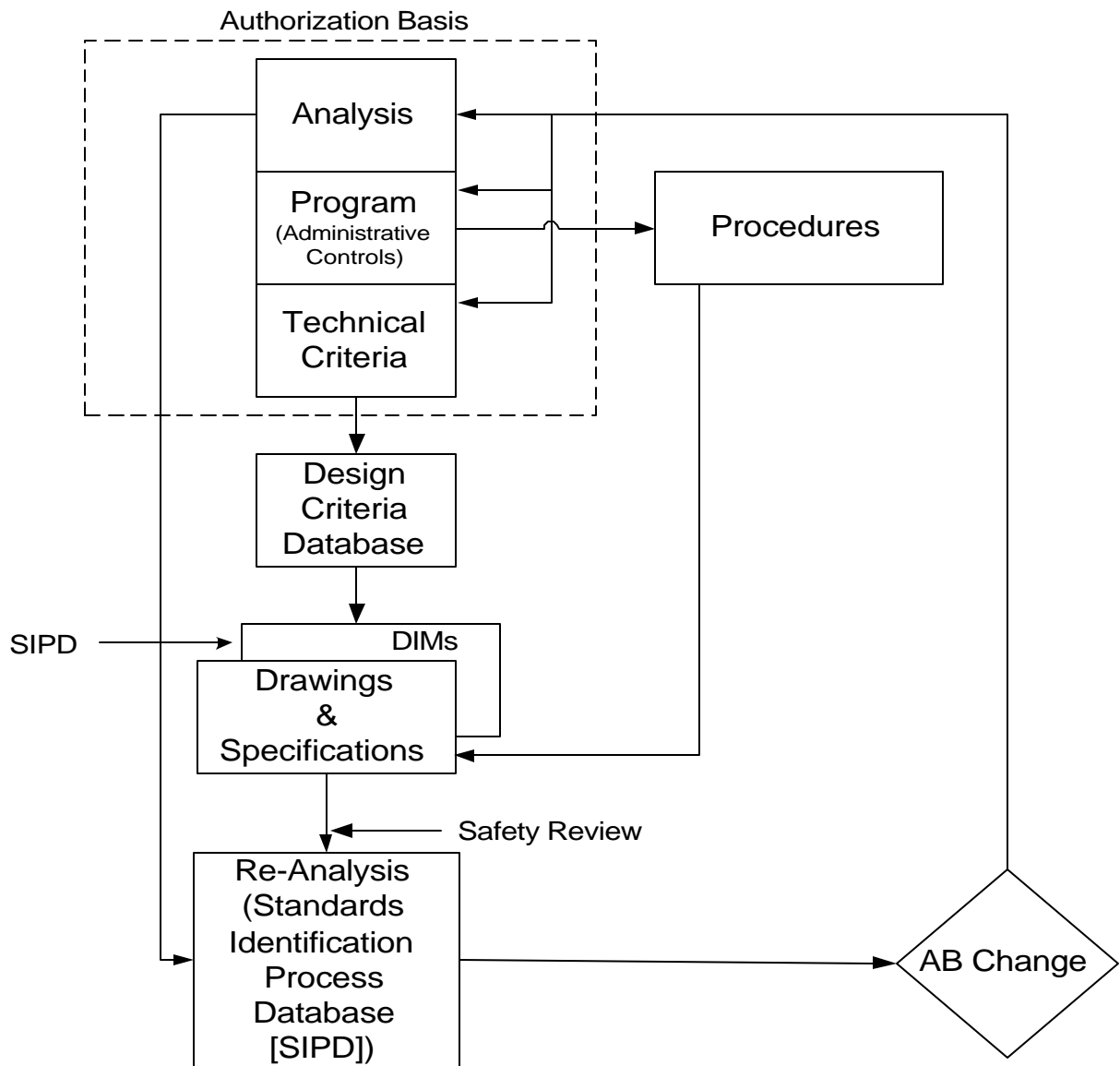
- QA surveillance of revised AB program complete and effectiveness of the revised AB maintenance program determined

This basic blueprint for Authorization Basis maintenance is described in more detail in the following sections.

AB Maintenance Overview

Authorization Basis maintenance is the process of ensuring alignment and consistency of the facility design and administrative controls with the requirements contained in the various AB documents. The AB consists of three basic elements that work together to ensure the safe design, construction, and operation of the WTP facility. Refer to Figure 1. The aggregate AB includes technical criteria that ensure the design meets engineering, scientific, environmental, and regulatory standards. The AB also contains programmatic or administrative controls to ensure that effective, consistent, and efficient management tools are implemented at the facility to augment the technical design in ensuring safety. Analysis is contained within the AB documents that establishes design and operating boundaries that envelope the facility safety basis. Figure 1 shows that the technical criteria will be input to primary design drawings and specifications through the use of a Design Criteria Database. Programmatic criteria will be applied to the design via the use of approved project procedures. Analysis impacts resulting from design changes will be identified by safety review.

Figure 1: Authorization Basis Maintenance



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Proposal

This proposal presents a new set of processes and procedures for the RPP-WTP Authorization Basis (AB) Maintenance Program. It describes the process by which BNFL Inc. intends to implement facility changes (both design and administrative controls changes) at BNFL's risk during the design and construction phases (i.e., prior to Cold Testing) pending revision of the Authorization Basis, including Regulatory Unit approval of Authorization Basis Amendment Requests (ABARs), when required.

This proposal is part of a BNFL Inc. submittal to the RU that include the following:

- this proposal
- suggested changes to RL/REG-97-13
- an Authorization Basis Amendment Request (ABAR) that presents and justifies the related changes to the existing AB for approval by the RU.

Program Changes to Effect Objective A1

BNFL recognizes that various design documents must be issued as part of the basis for the Fixed Price Estimate scheduled to be submitted to the DOE in April 2000. Prior to approval of this technical basis, the design must be judged adequately safe, compliant with applicable rules and regulations, and conformant with top-level standards. Therefore, alignment of the facility design and administrative controls with the Authorization Basis must be completed by April 24, 2000. This will be achieved as follows:

- At the designer/engineering level, the process for assurance of safety and AB consistency will involve the preparation of Design Input Memoranda (DIMs) for each primary design document included in the technical basis of the April Deliverable. (See Table 1.) These DIMs will incorporate information retrieved from the Design Criteria Database (DCD) – which includes the design-related portions of the AB, as well as from other top-tier design criteria documents (e.g., Basis of Design, Functional Specifications, etc.).³ Signature on the DIM by the cognizant engineer indicates that the proposed design change was reviewed against the existing AB (through review of the DCD). This process meets the regulatory positions of RL/REG-97-13, as redefined in BNFL Inc.'s suggested rewording.
- At the safety and management review level, BNFL will use the Integrated Safety Management (ISM) process to ensure safety and AB consistency. Specifically, all design changes submitted on the original Part A baseline and new or iterative designs described in documents issued for the April Deliverable will have undergone ISM review and will have been judged both safe and compliant with the authorization basis or Authorization Basis Changes Notices (ABCNs) will have been generated.
- All outstanding ABCNs and Safety Evaluations will be either approved or canceled to ensure capture of desired design changes and elimination of preliminary, discarded, or superseded designs. Authorization Basis Amendment Requests (ABARs) will be issued to ensure alignment of the design with implementing standards, fundamental aspects of design and significant and bounding hazards by April 24, 2000.

³ The DCD has been reviewed for content fidelity to its source documents, including to the AB.
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- Initial engineering development and subsequent ISM review of design documents will cover each of the important technical and regulatory requirements contained in the AB. These include the fundamental aspects of design (Initial Safety Analysis Report [ISAR]), significant and bounding hazards (Hazards Analysis Report [HAR]), and safety criteria and implementing standards (SRD). The DCD includes a listing of the fundamental aspects of design. During ISM review, if new or revised hazards are identified, these will be added to the Standards Identification Process Database (SIPD). This information will be available for use with future design changes making it easier for design and safety engineers to do computerized screening against the AB.

Table 1 – Primary Design Documents

Process Flow Diagrams
Piping and Instrumentation Diagrams
Ventilation and Instrumentation Diagrams
Mechanical Handling Diagrams
Material Flow Diagrams
Configuration Diagrams
Electrical Single Line drawings (selected)
Site Plot Plan
Layout drawings
System Descriptions

Program Changes to Effect Objective A2

The program activities described below will ensure that future design and administrative control changes will be reviewed against the AB and alignment maintained. The new features of the program that will need to be implemented in new or revised procedures are shown in italics.

- In the case of design documents, engineering will prepare new drawings, specifications, and design change applications in accordance with the design change control process. New or revised DIMs will be prepared for applicable design documents. The will be used to ensure consistency with the AB. *The existing DIM process and the Design Criteria Database will be implemented for all primary design documents.* Design engineering and ES&H will review all changes to primary design documents to ensure safety and conformance with top-level standards.
- Existing project plans, programs, procedures, codes of practice, and design guides will be examined for potential impact on the AB. *BNFL will initially examine the entire list of project procedures, programs, plans, and management process documents to eliminate those that have no impact on the AB. The remaining set will be identified on a controlled project list as requiring AB consistency reviews for changes or new issues of such documents.*
- Proposed changes (except for minor typographical or editorial changes) to administrative controls (procedure, program, plan or management process) will be reviewed for consistency against the existing AB by *individuals designated as experts on each of the documents comprising the Authorization Basis.* This review will be conducted for all new administrative control documents and for Procedure Change Requests (PCR) for *listed documents.* *This review will be documented on a Document Review Request form,* which must be completed before Project Document Control (PDC) will accept and process the document. Existing administrative control documents not listed will be exempt from AB consistency reviews. [This process complies with Note 10 in RL/REG-97-13].
- The originator/owner of any project procedure, program, plan, or management process will be responsible to ensure that the appropriate AB document experts review changes made to their administrative controls. As an additional check, the Manager of ES&H will continue to concur on

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all new and major revisions to procedures, plans, and programs through the normal document review process.

- For all documents, if the new or revised design or administrative control is inconsistent with the AB, the originator/owner will prepare and solicit approval on an ABCN and Safety Evaluation. If RU prior approval is required before implementing the change, the originator/owner will initiate an ABAR to the RU. To ensure consistency of ABARs and implementation of improvements suggested in this proposal, ES&H will review and approve all ABARs.
- *No design change will be implemented, (i.e., allowed to become part of any other design document) without an attached DIM. Likewise, no administrative change will be implemented (i.e., approved by management) without an attached Document Review Request form, evidencing AB consistency review by the AB document experts.*
- *Improvements will be made to the AB change process to ensure that ABCNs, Safety Evaluations, and ABARs are numerically linked to each other and to the documents that generated the change. Database tools will be used to more effectively track these various documents. Procedural requirements will be developed and implemented to ensure that AB screening and change documents are properly dispositioned before corresponding design documentation is implemented.*

The process for maintaining the design aligned with the Authorization Basis is shown on the “AB Maintenance Process” flowchart, which follows. This flowchart also contains the process for “proceeding at risk,” which is described in the next section.

(Manually insert “AB Maintenance Process” flowchart here.)

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Program Changes to Effect Objective B

BNFL has already experienced situations where project work has been impacted because desirable, safe, and efficient standards or practices were inconsistent with current requirements described in the AB.⁴ It is likely that delays will occur in the future as a result of idling designers or construction work forces while safety documentation is being developed and while Regulatory Unit review is in progress, potentially leading to serious cost and schedule consequences. In order to mitigate this type of situation, BNFL believes it is advisable to be able to “proceed at risk”. This concept would allow BNFL, contractually and procedurally, to proceed with program implementation or design or construction activity prior to approval of an AB change by BNFL Inc. management and the Regulatory Unit (for those changes that require prior RU approval). Of course, BNFL would perform the necessary safety assessments prior to proceeding at risk, under any circumstances. The implication is that BNFL would understand and accept the financial liability of such a decision. ABAR-W375-00-00006, “Authorization Basis Maintenance – Proceed at Risk,” which accompanies this Proposal, provides the necessary wording changes to the AB documents to allow proceeding at risk. A change to RL/REG-97-13 will be required, as well; BNFL’s suggested rewording of RL/REG-97-13 is provided below. BNFL proposes that the “proceed at risk” option begin upon RU approval of ABAR-W375-00-00006.

- BNFL proposes that changes may be made to the facility design in parallel with the preparation and submittal of ABCNs, Safety Evaluations, and, as necessary, ABARs. In these circumstances, BNFL will perform AB consistency reviews to ensure safety and then verbally discuss the change with the RU (if RU approval is required), prior to proceeding. BNFL will also assume financial responsibility for removal or rework of the proposed change if it is ultimately rejected by BNFL Inc. management or the Regulatory Unit. For those changes not requiring RU approval, ABCNs would typically be processed by BNFL within 14 days of the decision to proceed at risk. Similarly, for those changes requiring RU approval, ABARs would typically be submitted by BNFL within 14 days of the decision to proceed at risk.
- Similar to design changes, procedure change would be discussed with the RU prior to implementation of the change (if RU approval is required), and an ABAR would typically be submitted to the RU within 14 days of management approval of the procedure change.
- BNFL Inc. will meet with the DOE Office of River Protection to resolve any contractual issues associated with BNFL Inc.’s assumption of the financial risk of “proceed-at-risk” changes. The Regulatory Unit will be invited to this meeting.

Proposed Changes to RL/REG-97-13

BNFL proposes the following changes to RL/REG-97-13, *Regulatory Unit Position on Contractor-Initiated Changes to the Authorization Basis*, Rev. 5, effective upon approval of the “proceed-at-risk”

⁴ Some recent examples (some of which are currently in process) are as follows:

<i>Issue</i>	<i>Affected AB Document</i>	<i>AB Change Doc.</i>
Engineering Categorization (deletion)	SRD Vol. II Appendix A	ABAR 99-00018
Integrated Safety Management Team	SRD Vol. II Appendix A	ABAR 99-00015
Makeup and Documentation of Control Strategies		
Alignment of ISMP with QAP Rev. 5	ISMP	ABCN 00-00006
Credit for Facility Worker Evacuation	SRD Vol. II Appendices A and B	ABAR 00-00003

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ABAR.. These suggested wording changes are provided separately in a “redline/strikeout” markup format.⁵

- In Position 3.2 replace the word “evaluation” with “review” to distinguish between the AB consistency review required by Position 3.2 and the safety evaluation required by Position 3.5.
- Revise Position 3.5b, first bullet, as follows:
Insert the word “safety” before the word “evaluations”.
- Revise Position 3.5 b. third bullet as follows:
Insert the word “Safety” before the word “evaluations” at the beginning of the bullet. Also insert “be” before the words “documented.”
- Add a new Position 3.7 as follows:
3.7 Notwithstanding the provisions of Positions 3.2, 3.5 and 3.6, during the design and construction phases, the Contractor may, at its own risk, implement a change prior to revision of the Authorization Basis if:
 - a. Cold Testing of the facility has not yet commenced,
 - b. the Contractor has assessed the change against the following guidelines to determine if it is appropriate to implement the change at risk:
Proceed at risk will not be used for a change that meets any of the following:
 - 1. Design changes that would not meet SRD Safety Criteria or top-level safety standards
 - 2. Changes to Implementing Standards that would have broad design implications
 - 3. Design changes that would result in significant dose increases to workers or the public
 - 4. Design changes that would result in introduction of significant new hazards.
Proceed at risk may be used for a change that meets the following:
 - 5. Changes whose delay pending AB revision would result in significant cost or schedule impact, and
 - 6. Design changes that are physically reversible at an acceptable cost, as determined by the appropriate Design Manager or Area Project Manager, and any of the following:
 - a) Changes involving interpretations to or tailoring of Implementing Standards that would have limited design implications and are judged to have no significant safety impact.
 - b) Design changes that may increase the consequences of a previously-evaluated design basis event (DBE), but not significantly (i.e., the consequences are judged to be well below the applicable exposure standards).
 - c) Design changes that would result in a new DBE, but the consequences are judged to be well below the applicable exposure standards.
 - d) Changes where prior Regulatory Unit approval is not required.
 - c. the Contractor has informed the Regulatory Official (or his designee) of the change, if Regulatory Unit approval is required,

⁵ This markup was made to the Word 97 file on the Regulatory Unit’s website.
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- d. the Contractor has established and implemented controls to identify and track the change pending revision of the Authorization Basis, and
- e. the Contractor undoes implementation of the change in the event that the Regulatory Unit rejects the requested revision of the Authorization Basis (if approval was required).

New Position 3.7 would permit BNFL to “proceed at risk” while awaiting revision of the Authorization Basis and formal RU approval of those AB changes that require RU approval.

Proposed Authorization Basis Amendment Request

The changes proposed to RL/REG-97-13 will require nearly identical wording changes to Integrated Safety Management Plan (ISMP) Section 3.3.3, Changes to the Authorization Basis. This section is a reiteration of the language in RL/REG-97-13. The impact is that BNFL will insert clarification wording into both RL/REG-97-13 and the ISMP that will:

- Permit both Design Input Memoranda and Design Review Requests to be used to review a design or administrative control change against the requirements in the AB
- Make a clearer distinction between AB reviews and formal Safety Evaluations
- Provide management controls to ensure timely reconciliation of design and administrative controls against the AB (i.e., prior to use in the technical baseline for design and prior to management approval for administrative controls).
- Permit BNFL to proceed at risk while awaiting revision of the Authorization Basis and formal RU approval of those AB changes that require RU approval.

Nothing in this proposal challenges or conflicts with the basic requirements in the SRD, Quality Assurance Program and Implementation Plan (QAPIP), and ISMP that the AB must be maintained current with facility design and administrative controls.

Justification

The four bullets listed in the previous section, Proposed Authorization Basis Amendment Request, are the fundamental AB maintenance program changes proposed by BNFL. For each of the fundamental changes, BNFL has prepared a justification. These ideas will be reiterated and expanded, if necessary, in the formal ABAR requesting the Authorization Basis changes as described above.

Proposed Program Change #1

Permit Design Input Memoranda and Document Review Requests to be used to review a design or administrative control change against the requirements in the AB. In the case of a listed or new administrative control, the change will be reviewed by individuals designated as experts on each of the documents comprising the Authorization Basis.

Justification:

RL/REG-97-13 and the ISMP, Section 3.3.3 state that AB changes can be made as long as an “evaluation” is performed that demonstrates that the change is consistent with the existing AB or the AB is revised prior to implementation of the change. BNFL’s proposal simply identifies Design Input Memorandum and Document Review Requests as the means and record of the AB review or “evaluation” for design and administrative control documents, respectively. BNFL compliance with the contractual and AB requirements is not only maintained, but improved since written

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documentation is now specifically required as a demonstration of the review of designs and administrative controls against the AB. The review of administrative control changes will be made by individuals designated as experts on each of the documents comprising the Authorization Basis. In accordance with footnote 10 to RL/REG-97-13, Rev. 5, BNFL Inc. will develop a controlled project list of those administrative control documents that, if changed, could impact the AB and, therefore, must be reviewed against the AB prior to change approval. Only new and listed administrative controls would undergo this AB consistency review.

Proposed Program Change #2

Distinguish between AB reviews and formal Safety Evaluations.

Justification:

Two types of reviews are currently being done on design and administrative control changes. The first is a review of the change against the AB (using screenings or DIMs) to determine whether or not the change is consistent with the AB. In essence, AB documents are scanned for applicability to the change. If applicable, the change is compared to the AB for consistency or conflict. If the change is consistent and poses no conflict with the AB, the change can be implemented without modifying the AB. If, in this first review, it is found that the change is inconsistent or conflicts with the AB, then an Authorization Basis Change Notice is generated. The intent of the ABCN is to modify the AB to be consistent with the change because the change is deemed important to management, safety, or regulatory objectives. After the ABCN is generated, the second type of review occurs, i.e., the Safety Evaluation. This evaluation is designed to determine whether or not the proposed AB change requires RU approval prior to implementation. This would be the case if the change caused: 1) a deletion or modification to a safety criterion or standard contained in the SRD, 2) a reduction in commitment described in the AB, or 3) a reduction in the effectiveness of any program, procedure, or plan described in the AB.

Since the two types of reviews are clearly designed to do different things, BNFL proposes to make them more clearly distinct from one another in the language of both RL/REG-97-13 and the ISMP.

Proposed Program Change #3

Provide management controls to ensure timely reconciliation of design and administrative controls against the AB (i.e., prior to use in the technical baseline for design and prior to management approval for administrative controls).

Justification:

When BNFL Inc. decides to proceed at risk with a change, a Deficiency Report (DR), will be issued. The DR will be used to track closeout of pending ABCNs and to focus management attention on the need to complete timely revisions of the AB, thus ensuring that the duration for which the change is at risk will be minimized. The DR will also be used for trending purposes, thus ensuring that potential programmatic failures are identified and resolved.

BNFL Inc. proposes that the duration of a proceed-at-risk condition be minimized by expediting preparation of Authorization Basis changes. BNFL Inc. will target completion of the AB revision within 14 days of a decision to proceed at risk. AB revisions that do not meet the 14-day target will be highlighted in the tracking system to ensure that increased management attention is obtained. Similarly, BNFL Inc. proposes that, when Regulatory Unit approval of the change is required, the RU will perform an expedited review that targets completion within 14 days of submittal of ABARs that describe changes being implemented at risk.

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In the event that the Regulatory Official disapproves the request to amend the AB, a Non-Conformance Report (NCR) will be issued. The NCR will ensure prompt identification and implementation of any needed corrective actions, including potential rework. RU inspectors will be able to review open DRs and NCRs, such that they will be knowledgeable of any temporary misalignments between the as-designed, as-built facility and the AB.

Furthermore, BNFL Inc. proposes to close all open DRs and NCRs related to “at-risk” changes prior to initiation of Cold Testing; therefore, the AB will be fully aligned with the as-designed, as-built facility well in advance of production operations. Thus, the Regulatory Unit will be fully apprised of all changes that impact the AB prior to issuance of the Production Operations Authorization.

Proposed Program Change #4

Permit BNFL to proceed at risk while awaiting revision of the Authorization Basis and formal RU approval of those AB changes requiring RU approval.

Justification:

As noted previously, BNFL Inc. is concerned that delays will occur in the future as a result of idling designers or construction work forces while safety documentation is being developed and while Regulatory Unit review is in progress, potentially leading to serious cost and schedule consequences. BNFL Inc. believes that it will be advisable, on occasion, to “proceed at risk” with certain changes that require modifications to the Authorization Basis.

Section 3.1.1 of the Initial Safety Analysis Report (ISAR) describes the process used in the commercial nuclear power industry when a proposed change to a design or administrative control involves a change to Technical Safety Requirements or creates an Unresolved Safety Question (USQ). The essence is that the operator can proceed at risk prior to the approval of the AB change, provided that action itself does not create a USQ. This is the exact philosophy BNFL proposes to adopt during the design phase of the RPP-WTP project, specifically beginning with approval of the “proceed-at-risk” ABAR. Certain low risk changes to either the facility design or administrative controls could be implemented in parallel with BNFL management and RU (when required) approval of AB changes, so long as BNFL determines that the change is safe and then accepts the financial risk associated with the interim implementation of the proposed change. The impact of the proposed AB maintenance program change is to permit BNFL to proceed with low risk changes to ensure costs are controlled and schedule and work efficiencies are maintained.

BNFL Inc.’s proposal restricts this AB program change to the design and construction phases, prior to Cold Testing. Given that the risk of an accident involving radiological, nuclear or process chemical hazards occurring during this timeframe is low, this change maintains adequate safety. The Authorization Basis Amendment Request and Safety Evaluation that accompany this proposal provide more detail regarding how BNFL Inc. will address (a) regulatory risk (i.e., the potential for Regulatory Unit inspection and enforcement resources to be misdirected due to temporary non-alignment with the AB), (b) safety risk (i.e., the physical risk from nuclear, radiological or process chemical hazards), and (c) programmatic risk (i.e., the potential for failure to meet schedule milestones in the Tri-Party Agreement or the Contract).

The suggested rewording of RL/REG-97-13 provided in the preceeding section contains a set of criteria that BNFL will employ when deciding whether to implement a change “at risk.” The following are some examples of hypothetical applications of those criteria.

Examples when Proceed-at-Risk would not be used:

1. Variance of design parameter for a fundamental aspect of design (e.g., equipment not compliant with natural phenomena design loads for SSCs – qualified to 0.2g vs. 0.26g equiv.)

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2. Variance of system design with fundamental aspect(s) of design, e.g., addition of a portion of an ITS system
3. Code or standard change request by vendor based on industry practice (use of different code or standard with significant impact for change) or tailoring re-review identifying acceptability of change from IEEE Standard to commercial industrial standard.

Examples when Proceed-at-Risk may be used:

1. Local interpretation of code applicability for a code or standard identified in the SRD
2. Change in ventilation area classification from C3 to C2 in advance of completion of supporting analyses
3. Late relocation of pipe wallbox (requiring addition shielding) with support analyses for ALARA yet to be completed.

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